REMARKS/ARGUMENTS

The Examiner is thanked for the Office Action mailed November 15, 2007. The status of the application is as follows:

- Claims 1-20 are pending, claims 1-8, 10, 12, 14-17 and 19-20 have been amended herein;
- The Drawings are objected to as failing to comply with 37 CFR 1.84(p)(4);
- The Drawings are objected to as failing to comply with 37 CFR 1.83(a);
- Claims 1, 2, 3, 4, 5, 6, 7, 8, 12, 14, 15, 16, 17, 19 and 20 are objected to for informalities;
- Claims 1-5 and 9-11 are rejected under 35 U.S.C. 112, first paragraph;
- Claims 1-5, 8-15 and 17-20 are rejected under 35 U.S.C. 112, second paragraph;
- Claims 1, 6, 7, 9, 11 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harding et al. (US 2002/0150202 A1) in view of Schneider et al. (Medical Imaging 2001);
- Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harding et al. in view of Schneider et al. and Proska et al. (US 6,285,733 B1); and
- Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harding et al. and Schneider et al. in view of Proska et al.

The objections and rejections are discussed below.

Allowable Subject Matter

The Examiner is thanked for indicating that claims 3, 4, 8, 15 and 20 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office Action and to include all the limitations of the base claim and any intervening claims. The 35 U.S.C. 112, second paragraph, rejections are addressed *infra*. Applicant reserves the right to rewrite claims 3, 4, 8, 15 and 20 as indicated by the Examiner.

The Objection to the Drawings

The Drawings stand objected to for failing to comply with 37 CFR 1.84(p)(4).

In particular, the Office notes that both reference numerals 13 and 15 have been used to reference the examination zone. This rejection should be withdrawn as Fig. 7 has been amended herein to fix the typographical error. In particular, reference numeral 15 in Fig. 7 has been changed to 13.

The Office also notes that reference numeral 17 has been used to reference both the measuring surface and the circular trajectory. This rejection should be withdrawn as Fig. 5 has been amended herein to fix the typographical error. In particular, reference numeral 17 in Fig. 5, which references the circular trajectory, has been changed to 18.

The Objection to the Drawings

The Drawings stand objected to as failing to comply with 37 CFR 1.83(a). In particular, the Office notes that the drawings must show every feature of the invention specified in the claims and, thus, the line from a detector element to the radiation source, as in claim 5, must be shown in the drawings or cancelled from the claims. Applicant traverses this rejection as the subject line is not a "feature." Rather, it is descriptive language providing directional information for the orientation of the measuring values with respect to the detector element and radiation source. Claim 5 has been amended herein to further emphasize the nature of the line. Accordingly, this rejection should be withdrawn.

The Objection to Claims 1, 2, 3, 4, 5, 6, 7, 8, 12, 14, 15, 16, 17, 19 and 20

Claims 1, 2, 3, 4, 5, 6, 7, 8, 12, 14, 15, 16, 17, 19 and 20 are objected to for informalities. This objection should be withdrawn as the subject claims have been amended herein as suggested by the Office.

The Rejection of Claims 1-5 and 9-11 under 35 U.S.C. 112, First Paragraph

Claims 1-5 and 9-11 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Office states that claim 1 contains subject matter which was not described in the specification in such a way as to enable one skilled

in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. More particularly, the Office objects to the phrase "generating relative motions, comprising a rotation about an axis of rotation, between the radiation source and the object" in claim 1, stating that the specification does not describe a radiation source and an object rotating about an axis of rotation. Applicants submit that rotating an object about an axis of rotation in computed tomography is well known. However, in order to expedite fruitful prosecution, claim 1 has been amended herein to recite that the radiation source rotates about the object. Accordingly, this rejection should be withdrawn.

The Rejection of Claims 1-5, 8-15 and 17-20 under 35 U.S.C. 112, Second Paragraph

Claims 1-5, 8-15 and 17-20 stand rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 has been amended herein and now recites that the radiation source rotates about the axis of rotation. Accordingly, this rejection should be withdrawn.

Claims 1, 3, 8, 10, 12, 18 and 19 have been amended herein to fix the noted lack of antecedent basis.

The Office asserts that claims 3, 8, 10, 15, 17 and 20 should define what scatter angle means. Applicant traverses this rejection as the scatter angle is defined in the specification in connection with Fig. 7 and does not have to be defined in the claims. Moreover, at least one other claim further defines the scatter angle.

The Office asserts that claim 10 recites an incorrect statement. It is believed that the amendments herein fix the noted statement.

The remaining claims depend from the above claims.

The Rejection of Claims 1, 6, 7, 9, 11 and 16-19 under 35 U.S.C. 103(a)

Claims 1, 6, 7, 9, 11 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harding et al. in view of Schneider et al. This rejection should be withdrawn because the

combination of Harding et al. and Schneider et al. does not teach or suggest all of the limitations of the subject claims and, hence, fails to establish a *prima facie* case of obviousness with respect to claims 1, 6, 7, 9, 11 and 16-19.

> To establish a *prima facie* case of obviousness, ... the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2143.

Claim 1 is directed to a computed tomography method and recites, *inter alia,* reconstructing a CT image of the examination zone from the measuring values, during which a back projection is carried out in a volume which is defined by two linearly independent vectors of a rotational plane and a wave vector transfer. **Claims 6 and 7** recite similar aspects. The Office concedes that Harding et al. does not teach or suggest such aspects. In an attempt to make up for this conceded deficiency, the Office asserts that Schneider et al. teaches the above claim aspects and that it would have been obvious to modify Harding et al. with the disclosure of Schneider et al. to teach claim 1.

More particularly, the Office asserts that page 756, Section 3.1, of Schneider et al. teaches this claim aspect. However, page 756, Section 3.1, does not teach or suggest the subject claim aspect. Instead, page 756, Section 3.1, is directed towards the principles and degradation effects of reconstruction algorithms and states that an iterative algebraic reconstruction technique is used to reconstruct a volume data set in the three dimensions of x, y, and q. Nowhere in the referenced section does Schneider et al. disclose that x and y are two linearly independent vectors of a rotational plane. Hence, the referenced section of Schneider et al. does not teach or suggest all the claimed aspects.

If the Office is relying on inherency, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. (See MPEP 2112 IV citing *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993)). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so

recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" (See MPEP 2112 IV citing *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999)).

Accordingly, the combination of Harding et al. and Schneider et al. does not teach or suggest all of the limitations of the subject claims, and the rejection of independent claims 1, 6, and 7 should be withdrawn.

Claim 9, which depends from claim 1, recites that the wave vector transfer is a function of a first distance between a detector element and a foot of the detector unit, a second distance between a scatter center and the foot of the detector unit, and an inverse wavelength of the coherently scattered radiation. The Office asserts that Harding et al., paragraph [0032], teaches this claim aspect in that the physics are the same. However, the Office is mistaken.

In contrast, paragraph [0032] of Harding et al. discloses that the momentum transfer is computed as the product of the energy of the scattered X-ray quanta and the sine of half the scatter angle. This section of Harding et al. further states that in order to enable the momentum transfer to be determined, the scatter angle and the energy of the scattered X-ray quantum must be known. The scatter angle is given by the position of the detector element and the position of the point in the primary fan beam in which the scatter process has taken place. The energy of the scattered X-ray quanta must either be measured or use must be made of X-rays with quantum energies from an as small as possible range (monochromatic X-rays in the ideal case).

Hence, the section of Harding et al. relied upon by the Office requires computing the momentum transfer by taking the product of the energy of the scattered X-ray quanta and the sine of half the scatter angle. As noted in the instant application, with a conventional reconstruction technique based on back projection, a relatively large distance may exist or be assumed between the examination zone and the detector unit, and, thus, the relationship between the point of incidence of a scattered ray on the detector unit and the scatter angle may be ambiguous and, as a result, the back projection may produce inaccurate results. (See page 1,

lines 8-20). The technique disclosed in Harding et al. is a function of the scatter angle and, thus, is susceptible to such inaccurate results.

In contrast, claim 9 recites that the wave vector transfer is a function of a first distance between a detector element and a foot of the detector unit, a second distance between a scatter center and the foot of the detector unit, and an inverse wavelength of the coherently scattered radiation. As such, in claim 9 the wave vector transfer is determined without using the scatter angle, thereby mitigating inaccuracies noted above with respect to computing the momentum transfer with the scatter angle. Hence, the physics taught in Harding et al. clearly are not the same, and do not teach or suggest the subject claim aspects.

In view of the foregoing, the rejection of claim 9 should be withdrawn.

Claim 11, which depends from claim 1, recites that the wave vector transfer is a function of $A/(2D\lambda)$, wherein A represents a distance between a detector element and a foot of the detector unit, D represents a distance between a scatter center and the foot of the detector unit, and λ represents the wavelength of the coherently scattered radiation. As with claim 9, the Office asserts that Harding et al. teaches this claim aspect in that the physics are the same. As discussed above in connection with the rejection of claim 9, Harding et al. computes the momentum transfer using the scatter angle, which may be ambiguous, resulting in inaccurate results. Similar to claim 9, in claim 11 the wave vector transfer is determined without using the scatter angle, thereby mitigating the inaccuracies associated therewith. As such, the physics taught in Harding et al. clearly are not the same and do not teach or suggest the subject claim aspects. Therefore, this rejection should be withdrawn.

Independent **claim 16** requires a detector that detects primary and scattered radiation traversing an examination zone and a reconstructor that reconstructs measuring values indicative of the detected radiation, wherein the reconstructor back projects the measuring values in a volume as a function of a wave vector transfer that varies based on a difference between a scatter center and a foot of the detector. The Office asserts Schneider et al. teaches these claim aspects on page 756, Section 3.1. However, the referenced section of Schneider et al. does not teach or suggest such aspects. Rather, the referenced section of Schneider et al. discusses the principles

and degradation effects of a reconstruction algorithm, such as momentum transfer smearing, spectral smearing and geometrical effects. Accordingly, this rejection should be withdrawn

Claims 17, 18 and 19 depend from claim 16 directly or indirectly and are allowable at least by virtue of their dependencies.
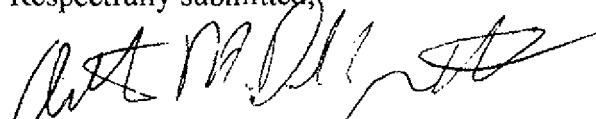
Other Claims

The claims not addressed above are allowable at least by virtue of their dependencies.

Conclusion

In view of the foregoing, it is submitted that the claims distinguish patentably and non-obviously over the prior art of record. An early indication of allowability is earnestly solicited.

Respectfully submitted,

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